

# MARINE REVIEW.

VOL. X.

CLEVELAND, O., OCTOBER 11, 1894.

No. 15.

## Capt. George Washington Jones.

Capt. George Washington Jones, better known as a pioneer ship-builder, the only one who survived to see lake shipping in its latter-day magnitude, died at his home in Cleveland, Wednesday, aged eighty-two years. He retained his mental and physical vigor to the last, having consulted vessel agents in the Perry-Payne building concerning his vessel interests within a week or two previous to his death.

Capt. Jones was a man of sterling integrity, and insisted on the best of workmanship on the vessels he built himself, as well as those in which he was interested. He was among the early advocates of iron and steel as material for ships and was a heavy stockholder in the Onoko, the first of the present day coarse freighters built of metal. He was also the first builder on the lakes to abandon the salt-water custom of launching vessels end on, having launched the propeller Empire in 1844 at Cleveland side on, the launch taking place not far from where the plant of the Cleveland Ship Building Company is now located. This vessel he commanded for some time in the passenger trade between Chicago and Buffalo. She was 260 feet long, 32 feet beam and 14 feet deep, was of 1,220 gross tons and had engines that developed 600 horse power.

The strengthening arch employed in nearly all lake vessels of earlier days, and used altogether in a modified steel form in modern wooden vessels on the lakes, was first used by him in the Empire, but as it was regarded as only a means of securing additional strength, and as details of construction were not made subjects of patent claims in those days, the idea of patenting the improvement did not occur to this veteran builder. Capt. Jones must have built a large number of vessels in his time, as he began with the John Jacob Astor in 1835 and he retired only a decade ago. When asked how many he had built, he would laughingly reply that he had forgotten the exact number. On the Astor's first trip, which was in the days before a Sault canal was in existence, the now well known Stannard rock on Lake Superior was discovered. The Astor was the first American vessel launched on Lake Superior. The timbers which were gotten out at Lorain, O., in the fall of 1834, were shipped by vessel to the Sault and hauled around the rapids. Oliver Newberry and Ramsay Crooks were interested in the building of the Astor, which was sold to the Hudson Bay and American Fur Company. Capt. Charles Stannard commanded her, and he gave his name to the rock he discovered on the first trip of the vessel.

Capt. Jones was born in 1812 at Saybrook, Conn., at the mouth of the Connecticut river, and was a master ship builder at the age of twenty-one. He left home when ten years of age, coming to Ohio with horse and wagon. His home was at Lorain, O., but he built vessels at many of the lake ports. In 1839 he married Sarah R. Tenny, who survives him.

England's torpedo boat destroyers Havock and Hornet are so fast that they are unable to use their bow torpedo tubes, as when going at full speed they are liable to overtake the torpedo. The torpedo, once fairly on its way, has a speed of 32 knots, but it requires some few seconds to get up speed, and it is the delay which enables the boat to overrun it. The consequences might be serious when firing charged torpedoes.

## Ships of 82,000 Horse Power with Belleville Boilers.

As the Belleville tubulous boilers in the Northern Steamship Company's passenger steamer North West have probably attracted more attention than any other feature of the big lake boat, and as the adoption of this type of boiler was due largely to success credited to it in naval and mercantile steamers of France previous to 1892, it will be interesting to note how extensively the French government is still using the boilers in its largest ships of war. A copy of the Engineer of London just at hand contains descriptions of four battleships, three first-class cruisers, six second-class cruisers, three third-class cruisers and four torpedo and gunboats, or twenty vessels in all, now under construction in France and all begun since January, 1892. Of these, two battleships, one first-class cruiser, three second-class cruisers and two third class cruisers, eight in all, are being fitted with Belleville boilers. Leading features of these eight boats, of a total of 82,000 horse power, fitted with this type of boiler are:

Bouvet—Triple-screw battleship of 14,000 horse power and 17 knots speed, to cost \$5,400,000.

Charlemagne—Triple-screw battleship of 11,232 tons displacement, 14,000 horse power and to cost \$5,400,000.

Pothuau—First-class cruiser of about 8,500 tons displacement and 15,000 horse power, to cost \$2,200,000.

Descartes, Pascal and Catinat—All second-class cruisers of 3,900 to 4,000 tons displacement, 19 knots and 9,000 horse power each, to cost \$1,600,000 each.

Galilee and Lavosier—Third-class cruisers of 2,317 tons displacement, 6,000 horse power and 20 knots, and to cost \$1,000,000 each.

## Lake Fright Matters.

Although it was shown in figures published last week that iron ore shipments from both Lake Michigan and Lake Superior ports to the present month were 1,087,000 tons in excess of the aggregate on the same date a year ago,—the shipments from Lake Superior showing a gain of 1,838,000 tons and those from Escanaba and Gladstone a loss of 760,000

tons—there seems to be little restriction in the movement of ore, and an urgent demand for vessels still exists, especially in the Lake Superior trade. A large part of this increase in shipments is due to the movement of ore from the Mesabi range, where, for instance, one new property, the Oliver, is credited with 450,000 tons shipped up to the present week. The Mountain Iron and one or two other big mines of the new range will also show shipping records that have hardly been expected. And then, too, a very large part of this increase of a million tons as compared with last year has gone to South Chicago, where very little ore was taken in 1893, so that the additional movement of cheap Bessemer ore from the head of Lake Superior is not as surprising as it may appear without taking into consideration the great change that has crowded out from Escanaba everything excepting the best grades of ores shipped from that port. Vessel owners willing to charter for three or four trips at 85 cents on ore from the head of Lake Superior could have secured contracts at that rate within the past few days, but an advance in the rate on wheat from Duluth to Buffalo to 3 cents, with a fair movement of the grain, prevented such transactions. Still, there is little possibility of any marked advance in ore rates, on account of condition of shipments.



CAPT. GEORGE WASHINGTON JONES.



### Trial of the Calumet.

Engineer-in-Chief Collins of the revenue cutter service, navy department, has kindly sent us a report of the trial of the new revenue cutter Calumet. The trial took place on Lake Erie and the Niagara river, Sept. 22. The Calumet is a steel boat 94 feet 6 inches long over all, 87 feet on the water line, 20 feet beam and 10 feet 3 inches depth of hold. She is propelled by a compound inverted direct acting engine with a high pressure cylinder 18½ inches in diameter, and a low pressure cylinder 32 inches in diameter, the stroke of both cylinders being 26 inches. Steam is generated by a Ward boiler of the size known as P. 30 with Q. fire box, which contains 2,490 square feet of heating surface and 74 square feet of grate surface. She is provided with a Wheeler admiralty surface condenser mounted on combined independent air and circulating pumps. The air and circulating pumps are each 9 inches in diameter and 10 inches stroke; the steam cylinder 8 inches diameter and 10 inches stroke. She has a four-bladed, solid, true-screw propeller of 8 feet diameter and 12½ feet pitch. The helicoidal area of all four blades is 24 square feet. The trial consisted of a run of four hours under full power and was solely for the purpose of testing the machinery. Owing to the firemen being unaccustomed to that type of boiler, considerable difficulty was experienced in maintaining a uniform steam pressure. On the average, however, the steam was carried at about 110 pounds, which drove the engine at about 115 revolutions per minute. The horse power developed was 470, which gave the vessel an average speed for the four hours run of 13.4 statute miles per hour. The trial board consisted of Engineer-in-Chief John W. Collins, Chief Engineer D. C. Chester and Asst. Engineer C. M. McAllister, while Capt. Geo. W. Moore, the superintendent of construction, and First Lieut. John Dennet were present to take observation as to the vessel's speed.

The Calumet when fully complete will leave the yard of her builders, the assignees of David Bell at Buffalo, N. Y., for Chicago, where she will be used for boarding purposes, and for the enforcement of the new anchorage laws, passed by congress, and which have recently gone into effect at that place.

### War Ships of China and Japan.

Since the outbreak of war between China and Japan, some particulars about the natures and relative strengths of their fleets will doubtless be of interest to some. The Chinese fleet includes five armored ships and twenty-four unarmored vessels, in addition to twenty-four small gunboats and six floating batteries. Particulars of the armored ships follow:

NAME OF IRONCLADS.	Tons.	Horse Power.	Armor belt, Inches.	Speed in Knots.
Chen-Yuen.....	7,430	6,200	14	14.5
King-Yuen.....	2,850	3,600	9½	16.5
Ping-Yuen.....	2,850	2,400	8	10.5
Lai-Yuen.....	2,850	3,600	9½	16.5
Ting-Yuen.....	7,430	6,200	14	14.5

The Chen-Yuen and the Ting-Yuen are of fair size, the others being small, one of them, the Ping-Yuen, comparatively slow. The ships are well armed. The Chen-Yuen and Ting-Yuen have 12-inch Krupp guns, the King-Yuen has 8-inch and the Ping-Yuen 10-inch guns, besides smaller ones. Among the unarmored ships the Chih-Yuen and the Ching-Yuen are the most formidable, being of 2,300 tons displacement, 5,500 horse power and 18 knots speed. They have 10-inch steel barbets and three 8-inch 12-ton guns each, besides quick-firing and machine guns. The Tshao-Yong is a vessel of 1,350 tons displacement, 2,677 horse power, and 16.8 knots speed. She was launched in 1881, and armed with two 10-inch Armstrong guns, four 4.7-inch quick firers, and seven machine guns.

The armored ships of Japan are not formidable as ironclads. They are as follows:

NAME.	Tons.	Horse Power.	Armor belt, Inches.	Speed in Knots.
Fu-Soo.....	3,718	3,500	7	13.2
Hi-Yei.....	2,200	2,490	4½	13.0
Kon-Go.....	2,200	2,450	4½	13.7
Rio-Jo.....	1,459	975	4½	9.0
Tschiyoda.....	2,450	5,600	4½	19.0

The last of these would be better described as a protected cruiser than an ironclad. The others are small, weak and slow. There are thirty-two unarmored ships, of which the Akitsushima, the Hasidate, the

Itsukushima, the Metsuchima and the Yoshino are the most formidable. The latter is one of the most rapid cruisers afloat, having 15,000 horse power and 23 knots speed. The Japanese cruisers are more numerous and larger than the Chinese, and many of them are model craft in the eyes of those who believe that armored protection is not worth what it costs.—Invention.

### Avoid the Floater.

With the elevator combine again in full control at Buffalo, some trouble may be expected by vessel owners from consignees trying to send cargoes to one of the floaters that is still in use. About three weeks ago the Western Elevating Association was reorganized, and all the floating elevators except the Cyclone were laid up. Previous to that time there had been no elevator combination this season, and all the grain intended for canal shipment was transferred from lake craft to canal boats by floating elevators. The Cyclone is in some manner in the association, but transfers grain to canal boats for five-eighths of a cent a bushel, which is one-fourth of a cent less than the association rate, and as a matter of course the consignees of the grain wish to avail themselves of the difference in the rate. Vessel owners or agents do not object to having cargoes transferred by the Cyclone, except for the reason that in order to do so vessels are compelled to moor at the Erie basin breakwater. In doing this they are placed broadside to the wind when it is down the lake, and they are exposed to nearly the full force of rough weather with nothing to moor to except some rings in the breakwater. At this season of year, when gales are so prevalent, a vessel can not tie up to such a place in safety, and owners are fully justified in refusing to expose their property in this way.

The schooner Fitzpatrick was being unloaded at the Cyclone in the same locality last fall when she broke adrift, doing considerable damage and incurring a bill of expense in getting out of the trouble. Anyhow the floating elevators, operated as they have been without sufficient backing to result in any great opposition to the elevator combination, are a nuisance to vessel owners, for while they transfer the grain cheaper, the vessel has to pay the same price for shoveling. The floaters have no storage capacity and can only unload when there are canal boats ready to take the grain, and as a rule there is more or less waiting for canal boats. Some time it amounts to very serious detention to the vessel, and as the situation is now, with only one floating elevator, the Cyclone, in commission, vessels that are sent to that elevator are very likely to be compelled to wait for one another.

### Ship Building During the Last Quarter.

Following is a statement of vessels built in the United States and officially numbered, as shown by the records of the bureau of navigation, treasury department, during the quarter ended Sept. 30, 1894:

	Steel Steam Vessels.		Iron Steam Vessels.		Wooden Steam Vessels.		Wooden Sail Vessels.	
	Number.	Gross tons.	Number.	Gross tons.	Number.	Gross tons.	Number.	Gross tons.
Atlantic and Gulf coasts...	4	1,057.25	1	408.88	30	1,734.80	111	10,472.74
Pacific coast.....	...	...	...	...	5	677.17	15	1,037.09
Great lakes.....	1	2,624.03	...	...	22	4,402.81	8	187.83
Western rivers.....	2	563.78	...	...	18	2,309.96	...	...
Total.....	7	4,245.06	1	408.88	76	9,224.74	134	11,697.66

Thus the total of vessels of all kinds built during the quarter was 218 of 25,576.34 tons gross, of which eighty-four of 13,878.68 gross tons were steam, and 134 of 14,697.66 gross tons were sail or unrigged vessels. During the previous quarter the total new vessels was 304 of 48,503.28 gross tons, and of these 105 of 35,065.25 gross tons were steam, and 199 of 13,438.03 gross tons were sail or unrigged.

### Stocks of Grain at Lake Ports.

The following table, prepared from reports of the Chicago board of trade, shows the stocks of wheat and corn in store at the principal points of accumulation on the lakes on Oct. 6, 1894:

	Wheat, bu.	Corn, bu.
Chicago.....	25,498,000	1,834,000
Duluth.....	3,401,000	.....
Milwaukee.....	638,000	.....
Detroit.....	1,600,000	11,000
Toledo.....	3,349,000	29,000
Buffalo.....	1,978,000	234,000
Total.....	36,464,000	2,108,000

At the points named there is a net increase for the week of 371,000 bushels of wheat, and a net decrease of 305,000 bushels of corn.



## Illustrated Patent Record.

SELECTED ABSTRACTS OF SPECIFICATIONS OF A MARINE NATURE—FROM LATEST PATENT OFFICE REPORTS.

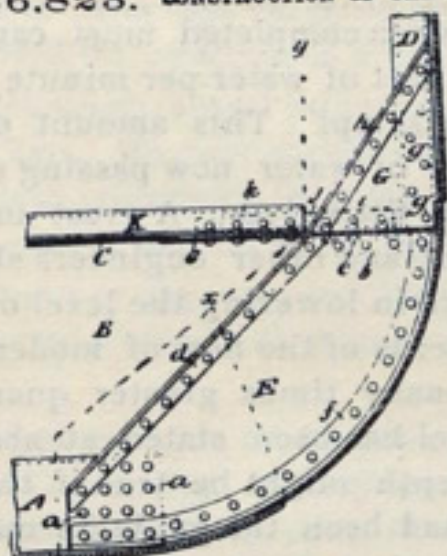
**526,823. CONSTRUCTION OF SHIPS.** Sinclair Stuart, Plainfield, N. J. Filed March, 14, 1894. Serial No. 503,549.

Claim. In an iron or steel vessel having a water ballast bottom tank, the combination of floor channels terminating at the lower turn of the bilge, side frames terminating above the tank at the upper turn of the bilge, brackets conforming to the bilge arranged within the tank and connected with the floor channels and with the margin of the tank top, and bracket plates above the tank top connecting the margin of said top with said side frames.

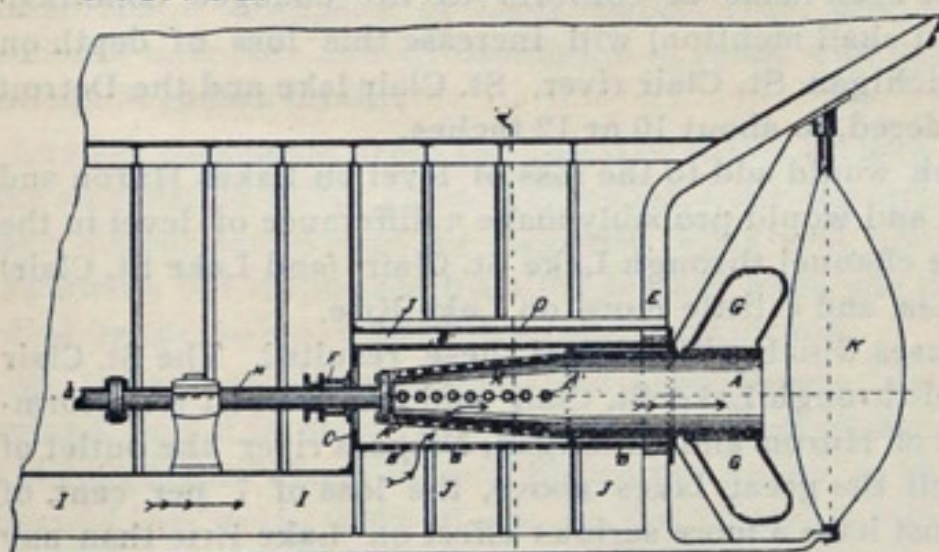
**526,751. OUTBOARD PROPELLER SHAFT FOR VESSELS.** Carl H. Schultz, Jr., Murray Hill, N. J., Carl H. Schultz administrator of Carl H. Schultz, Jr., deceased. Filed Oct. 12, 1893. Serial No. 487,943.

A screw propeller having a tubular or hollow outboard shaft, provided with perforations through the shell or walls thereof, in connection with a perforated outboard bearing pipe, in combination with a surrounding chamber or jacket having a pipe or channel connected forward from the chamber through the hull of the vessel to supply the chamber with water from the sea.

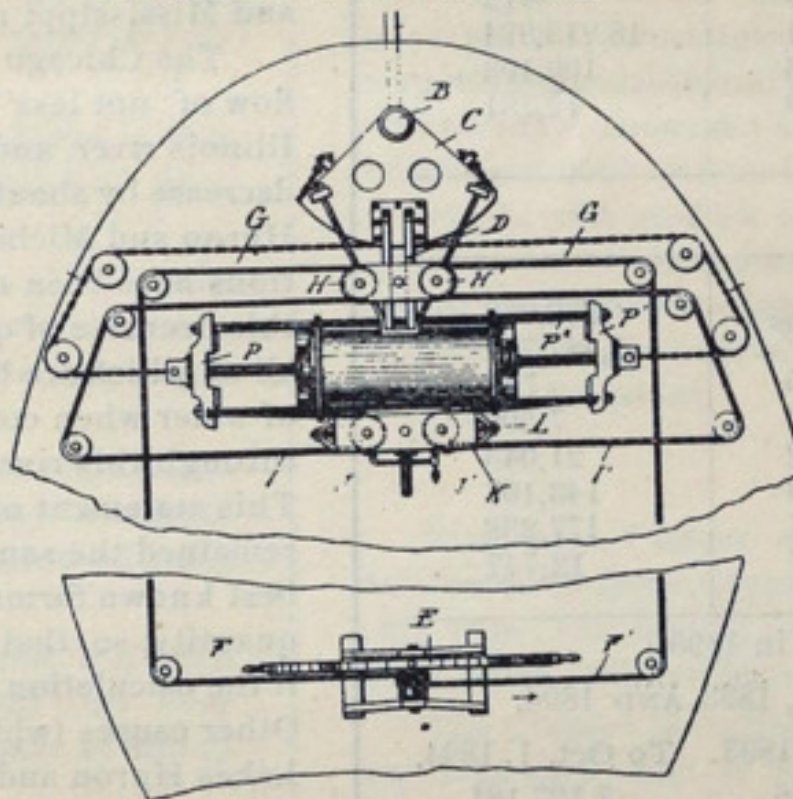
526,823. CONSTRUCTION OF SHIPS.



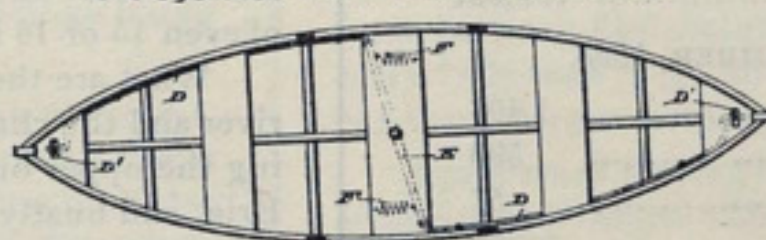
526,751. OUTBOARD PROPELLER-SHAFT FOR VESSELS



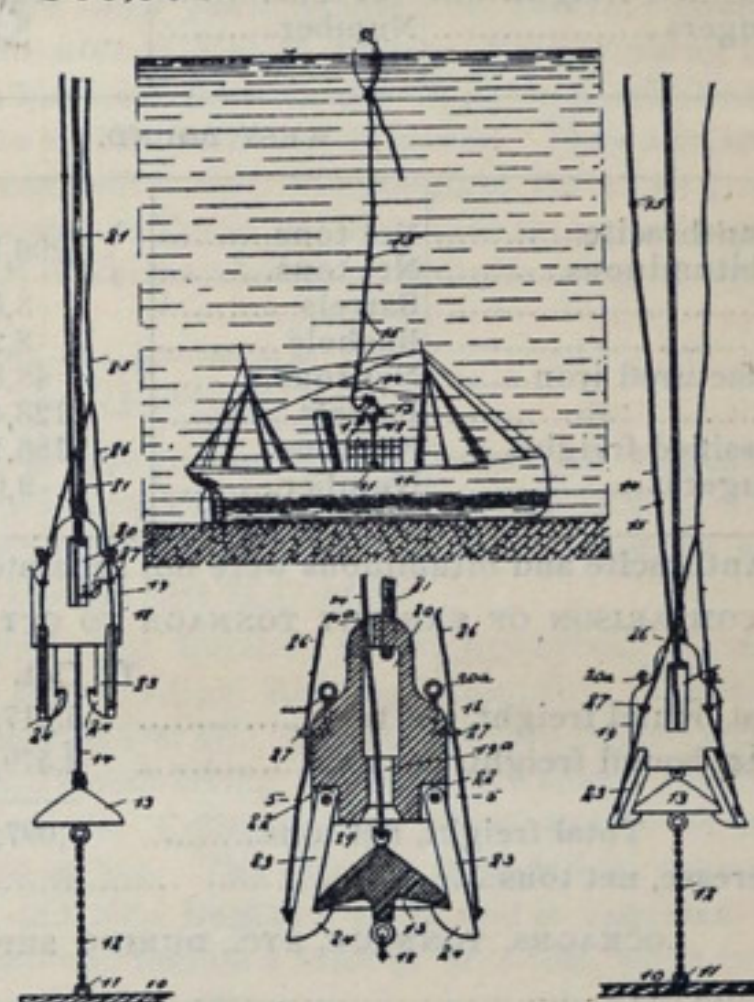
526,930. VESSEL STEERING-GEAR



526,989. BOAT-DETACHING APPARATUS



526,959. MEANS FOR RAISING SUNKEN VESSELS



**526,930. VESSEL STEERING GEAR.** Daniel M. Maxon, Bay City, Mich., assignor of one-half to Walter H. Whittemore, same place. Filed Nov. 14, 1893. Serial No. 490,923.

Claim. In a steering gear, the combination of a power cylinder, a piston therein, connection from the piston to the rudder, a valve chamber, a valve having ports adapted to admit steam to both sides of the piston at the same time, a piston rod extending through both ends of the valve chamber, a plate connecting the opposite ends of the rod beside the valve chamber, sheaves on the plate, and cables from the rudder passing in opposite directions around the sheaves and connected to opposite ends of the piston rod of the power piston.

**526,989. BOAT DETACHING APPARATUS.** Francis Blanding, Putnam, Conn. Filed Oct. 12, 1893. Serial No. 487,918.

Claim. In a device for launching boats, a boat having guides attached to the opposite sides and ends thereof adjacent to the gunwales, rods D D carried by said guides and bent to conform to the shape of the boat, the ends adjacent to the bow and stern being bent to lie on a line with the keel or longitudinal center of the boat and engage with fixtures B B, having upwardly projecting portions b b with apertures b' b'; the end portions D' D' of the curved rods having notches d d in their upper surface; a cross-bar E pivoted to a central thwart or seat, and springs F F which draw upon the cross-bar so as to hold the rods D D normally out of engagement with the fixtures B B, in combination, with the hoisting and lowering tackle, substantially as shown, whereby the weight of the boat when supported by the hoisting and lowering tackle will hold the rods in locked engagement with the fixtures B B.

**526,959. MEANS FOR RAISING SUNKEN VESSELS.** Edward M. Arnold, Pawtucket, R. I. Filed Nov. 4, 1893. Serial No. 489,988.

Claim. The combination of a cable adapted to be secured to a sunken

vessel, a button having a convex upper surface and a concave lower surface, and to the upper and lower surfaces of which the said cable is attached, and a grapple, comprising a head having a longitudinal opening for the passage of the cable and provided at its lower end with pivoted hooks.

## In The Days of Canal Schooners.

Here is a story that is told of the late Stephen B. Grummond and Capt. Wm. Rolls, now in the Detroit rafting steamer Volunteer. It may not be strictly true but is good enough to repeat. Grummond was captain and owner of the tug—well, we'll call her Sassacus—and Rolls was mate with him. Both men had strong individualities and their aggressiveness made them some enemies, and the Sassacus had lost many a tow in consequence. But they finally hit upon a scheme that worked to a charm and here it is:

One day Grummond, who was on watch, sighted the Erastus Corning off Lexington, and going below he roused Rolls, who was having a happy time in the land of dreams, with the cry:

"Come Bill, get up and take the deck—there's the Corning coming, and you know that I don't stand no show with old Dobson."

Up comes Rolls, and hails the Corning, while Grummond conveniently hides.

"On board the Corning!"

"Aye! Aye!"

"Want a tow to Lake Erie?"

"No, sir. That's Steve Grummond's boat, and he don't get a cent's worth of business from me."

"You're wrong there, Cap. Grummond use to own this here tug, but I bought him out and gave him his walking papers two weeks ago. I'm running the Sassacus now. You know me—Bill Rolls."

"Is it you Bill? Why of course I know you, and am mighty glad to hear of the change. Take our line," and away goes the tug for Lake Erie with a fine tow-bill behind her.

On Lake Erie after casting off the Corning, they fell in with the Elizabeth Jones, bound up with coal. Rolls was on the watch.

"By all that's holy, if that ain't Tom Jackson. He hasn't any use for me," he exclaimed, when he read her name.

Going below he awoke Grummond with this stage whisper: "Steve, get up; here is old Jackson with the Jones. Let's see what you are good for."

Grummond got up and yelled at Jackson: "Tow you through to Lake Huron, Tom."

"Are you the man that hires Bill Rolls?"

"I had him some weeks ago, but he was losing me so much business that I let him slide. I don't think much of him nohow."

"No more do I. It's a good thing you let him go, or you'd lose this tow. Well, take the line."—Detroit Evening News.

Sixteen vessels of various classes are now in process of construction for our navy, and the last of these will be finished and in commission within two years.



### St. Mary's Falls Canal Traffic.

In the last issue of the REVIEW statistics regarding coal and iron ore shipments to and from Lake Superior were printed in full. Now the statement showing the St. Mary's Falls canal business entire to Oct. 1 is at hand. The business of the canal up to the 1st inst. is a million tons greater than it was at the same time a year ago, or to be exact the figure is 991,981 tons. The fact that the business of Lake Superior as a whole shows a net increase is, of course, due to the very heavy movement in iron ore. Following are statements showing the traffic in detail:

FREIGHT MOVEMENT TO AND FROM LAKE SUPERIOR UP TO OCT. 1, 1894  
COMPARED WITH MOVEMENT TO THE SAME DATE IN 1893.

EAST BOUND.			
ITEMS.	Designation.	To Oct. 1, season of 1893.	To Oct. 1, season of 1894.
Copper.....	Net tons.....	66,068	74,415
Corn.....	Bushels.....	1,899,599	1,425,511
Building stone.....	Net tons.....	16,696	17,970
Flour.....	Barrels.....	4,738,400	5,731,472
Iron ore.....	Net tons.....	3,188,187	5,247,323
Iron, pig.....	Net tons.....	23,863	15,891
Lumber.....	M. ft. B. M.....	399,717	540,369
Silver ore.....	Net tons.....	1,910	412
Wheat.....	Bushels.....	30,535,481	18,913,974
Unclassified freight.....	Net tons.....	100,163	100,193
Passengers.....	Number.....	8,219	12,731

WEST BOUND.			
Coal, anthracite.....	Net tons.....	} 2,296,142*	362,068
Coal, bituminous.....	Net tons.....		1,487,757
Flour.....	Barrels.....	3,565	783
Grain.....	Bushels.....	8,250	7,500
Manufactured iron.....	Net tons.....	48,882	21,043
Salt.....	Barrels.....	123,410	143,107
Unclassified freight.....	Net tons.....	186,157	177,238
Passengers.....	Number.....	9,067	12,747

\*Anthracite and bituminous were not separated in 1893.

#### COMPARISON OF FREIGHT TONNAGE TO OCT. 1, 1893 AND 1894.

	To Oct. 1, 1893.	To Oct. 1, 1894.
East bound freight, net tons.....	5,517,546	7,127,181
West bound freight, net tons.....	2,579,925	1,970,271
Total freight, net tons.....	8,097,471	9,097,452
Increase, net tons.....		999,981

#### LOCKAGES, TONNAGE, ETC., DURING SEPTEMBER, 1893.

Propellers.....	1,496
Sails.....	590
Rafts and unregistered craft.....	57
Total passages.....	2,143
Total number of lockages.....	861
Total registered tonnage.....	1,966,175
Total freight.....	2,210,628
Total number of passengers.....	4,102
Time lock was operated 627 hours, 20 minutes.	

### She Evaded the Search Lights.

A report relative to the recent experiments off Newport with the United States torpedo boat Cushing, as to the visibility and audibility of torpedo boats at night, says that 800 yards is the maximum torpedo range, and a speedy craft would make great progress inside of this, before guns could be trained upon her, so it is still questionable whether the search light is much of a safeguard against an attack from the torpedo boats. The Cushing was painted with a color supposed to be least conspicuous. In the first experiment she steamed out from shore at night, having a powerful search light from the land directed upon her. At a distance of 100 yards, she passed out of sight of those on shore, and this, although it was light enough on the Cushing herself to read. For the second experiment, which was to determine the distance at which the boat could be detected by the noise of her engines and swash of water from the propellers, the night was very favorable except for moonlight. The first thing observed was sparks from the funnel, and shortly afterward the swash of water was heard. The search light was then used, but it was several seconds before the boat was sighted, being then at a distance of 800 yards.

In the list of patents published in this issue are two by men well known on the lakes. Mr. Sinclair Stuart, surveyor for the classification society that publishes the United States Standard Register, has patented certain details of steel and iron ship construction, and Mr. Daniel M. Maxon of Bay City has recovered a steering gear.

### Effect of Drainage Canal on Level of Lakes.

EDITOR MARINE REVIEW:—Following is a copy of a letter from an expert discussing the subject of the Chicago drainage canal. It seems to me the greatest folly for the government to spend millions in deepening the connecting waters of these great lakes only to have the money and labor wasted by this Chicago canal. Are the people willing to thus see their money wasted and the most important avenue of commerce in the northern country blockaded? Any proceeding by which the level of these lakes would be lowered, should be stopped, and that at once. Surely by taking 600,000 cubic feet of water away every minute, the level will not be raised, and the government is spending millions to achieve the same end by deepening the connecting waters.

The people do not realize the gravity of the subject. Those in authority should attend to this matter, and at once. It affects the welfare of all the people in the northwest. What the people are striving for is cheap transportation of freights and Chicago would render all efforts vain by a gigantic wrong to the whole northwest.

RICHARD P. JOY.

Detroit, Mich., Oct. 9, 1894.

#### COPY OF LETTER ON DRAINAGE CANAL QUESTION.

DEAR SIR:—At your request I have briefly prepared some reasons why the great lakes and their connecting rivers will suffer by the diversion of "not less" than 600,000 cubic feet of water per minute to the Illinois and Mississippi rivers.

The Chicago drainage channel when completed must carry a regular flow of "not less" than 600,000 cubic feet of water per minute south to the Illinois river, and thence to the Mississippi. This amount of water will decrease by about 7 per cent, the flow of water now passing out of Lakes Huron and Michigan through the St. Clair river. A great many calculations have been made by government and other engineers showing what this decrease of quantity would make in lowering the level of those lakes all of which are based on measurements of the flow of moderate amounts of water when compared with the many times greater quantity flowing through this river. This loss of level has been stated at about 5 inches. This statement of loss of level or depth might be true if the conditions remained the same as those which had been the guide for making up the best known formula for calculating water discharge of a vastly smaller quantity, so that this loss of level would have been something more if the calculation had been made to conform to the changed condition. Other causes (which I shall mention) will increase this loss of depth on Lakes Huron and Michigan, St. Clair river, St. Clair lake and the Detroit river, if fairly considered, to about 10 or 12 inches.

The causes which would add to the loss of level on Lakes Huron and Michigan are below, and would probably make a difference of level in the Detroit river and the channel through Lake St. Clair (and Lake St. Clair) of even 15 or 16 inches, and a little more on Lake Erie.

What are the causes which will compel these results? The St. Clair river and the channel through Lake St. Clair and the Detroit river forming the upper outlet of Huron and Michigan, Niagara river the outlet of Erie, and finally of all the great lakes above, the loss of 7 per cent. of water from above must have a more serious effect on Lake Erie than any of the lakes above, as the cross section and depth of water at the crest of the rapids will more seriously feel the loss of quantity from above. The loss of 7 per cent. would not be materially less at Niagara river, as the inflow to this lake is small from the American and Canada water sheds—hardly enough to supply evaporation. Some say narrow up the outlet of Huron enough to make good the loss of water that must pass through the drainage channel south. If this is done, as intimated by government engineers and others, by a solid jetty at the outlet of Huron, for preserving the level of Lakes Huron and Michigan, that would otherwise be lowered 10 or 12 inches, or even about 5 inches, a current would be made at this fixed point that would materially impede navigation. If a solid jetty will not do to decrease the flow, then the St. Clair and Detroit rivers must be narrowed, perhaps even their whole lengths, at immense cost.

Will the American or the Canadian side consent to anything of this kind?—much less the city of Detroit and the cities on both sides of Lake Erie, where the loss of water from above will be most seriously felt in the loss of level or depth. Detroit river might have to be narrowed about 125 feet. Niagara river must be narrowed to meet this loss by the diversion of the water of Lake Michigan southward through the drainage channel. Those interested in the drainage channel try to laugh down the idea that the great lakes can be lowered by discharging "not less" than 600,000 cubic feet of water per minute through this channel. This vast amount of water is practically one-fourteenth of the quantity passing out through the St. Clair river. Such a loss of quantity cannot be laughed down. The drainage channel will, from time to time, have to be deepened, if the lake is drawn down, to keep good "not less" than 600,000 cubic feet of water per minute of constant flow.

GORDON H. NOTT.

No. 834 Rookery, Chicago, Ill., Oct. 1, 1894.

Capt. A. E. Persons, a veteran vessel master, seventy-six years of age, died at Alpena last week.



### Coal Freights.

Soft coal has been very scarce, even with the removal of all effort on the part of vessel owners to uphold rates, and shippers are finding an abundant supply of wild tonnage at 35 cents to the head of Lake Superior and 45 and 50 cents to Lake Michigan ports.

Low coal freights are, and have been, due in part to the very light movement of hard coal out of Buffalo. Hard coal shipments to all ports on Lake Superior for the season up to Oct. 1 amounted to only 362,068 tons, according to Sault canal statements. Considerable hard coal was carried over this season at the head of Lake Superior, but it would seem, admitting of a surplus at the opening of the season, that the shipments so far have been below requirements. There is, however, nothing in advices from Buffalo as yet to indicate an active fall movement of anthracite.

### Around the Lakes.

Capt. Swain and the owners of the wrecking steamer Favorite have reason to feel proud of their work in releasing the Neosho from Spectacle reef.

G. H. Breyman & Bros., of Toledo, have bought another Lake Michigan tug. They paid Reynolds & Co., of Sturgeon Bay, \$6,000 for the tug Joseph Goldsmith.

The new Minch steamer, I. W. Nicholas, starts off with a good record in carrying wheat. Her last cargo delivered at Buffalo amounted to 110,000 bushels, carried on Sault canal draft.

Alfred Chesebrough, vessel owner of Detroit, died at his home in that city a few days ago. He was seventy-eight years of age and had been identified with lake commerce for a great number of years.

President James J. Hill of the Great Northern Railway and Northern Steamship Company is expected in Cleveland this week, to settle matters regarding the completion of the second of the Northern line passenger boats.

No contract has yet been let for the car ferries to run between Conneaut, O., and Port Dover, Ont. The financial end of the project is a little slow in materialization but the promoters of it seem confident of their ability to carry it out a little later on.

The passenger and freight boat to be built by the Great Northern Transportation Company at Owen Sound, Ont., will be 220 feet over all and will have fore-and-aft compound engines, with cylinders 28 and 54 inches by 36 inches stroke.

Lumber shipments from the Saginaw valley by lake this season will be the smallest in thirty years. Although Lake Superior is now leading in lake lumber shipments, the Saginaw valley still holds a big share of the business, but shipments from the famous Michigan district are being handled by the railways more extensively each year.

Mr. Gustave Cold, secretary of the Ship Owners Dry Dock Company, Cleveland, says it is more than probable that one of the company's docks will be lengthened about 50 feet during the winter, as the directors have authorized the work, when it can be done from earnings of the plant. The improvement will cost but about \$6,000 and will enable the company to dock a boat of 400 feet keel.

One of the crew of the steamer Neosho says of her stranding on Spectacle reef: "We left Detour soon after noon, bound for South Chicago, steering a course intended to clear the south side of Spectacle reef. The weather was hazy, but the lighthouse was plainly seen. About 3 o'clock in the afternoon, when at what was thought to be a distance which would take her safely past the reef, she was headed southwest, and struck on the extreme southeast edge of the reef, three-quarters of a mile from the light. The captain supposed that he was fully a mile off, but misjudged the distance owing to the peculiar condition of the atmosphere."

The suggestion that a life saving station should be established at Seul Choix point, Lake Michigan, is worthy of the attention of vessel owners and masters, and no time should be lost in petitioning the life saving service for the establishment of a station somewhere in that vicinity. In bad weather, and especially in the fall when prevailing winds are northerly, the north passage from the Straits to Poverty island, is used almost exclusively by all vessels trading to Escanaba and other Green Bay ports. A large sum of money has been expended in lighting this north passage, on account of its extensive commerce and the dangers to which vessels are subjected, and a life saving station would be in line with the improvements already secured.

Another race between the Goodrich line steamer Virginia and the whaleback Christopher Columbus occurred on the occasion of the last trip of the whaleback from Milwaukee to Chicago. The Virginia left Milwaukee five minutes ahead of the Columbus and her officers claim to have reached a point abreast of Chicago harbor full ten minutes ahead of the whaleback. Capt. Stines of the Virginia says that he encouraged a trial of speed because he was informed that the management of the Christopher Columbus proposed to close the season with a flourish by beating the Virginia, and then celebrating the victory with an elaborate display

of fireworks, that was to be shot off when the Virginia, after defeat, passed into Chicago harbor and up to her dock. In order to return kind for kind, Capt. Stines says he headed the Virginia lakeward, and as the Columbus passed en route to her pier, he first sounded the deep-toned chime whistle and then gave her a thorough illumination with the Virginia's powerful search light.

Float lights at the Lime-Kilns crossing drifted from their moorings a short time ago, either through a raft running into them or some other accident, and the keepers were required to communicate with the light-house inspector at Buffalo before they could hire a tug to replace them. The disadvantages of such delay were brought to the attention of the executive officers of the Lake Carriers Association at their meeting in Cleveland Tuesday, and Secretary Keep was instructed to bring the matter to the attention of the light-house officials. Mr. Keep will also endeavor to secure some arrangement whereby vessel masters desiring to leave Escanaba by night will not be prevented from doing so by the recent ruling which prevents the customs officer at that port, where there is no official on duty at night, from leaving blanks with the ore dock superintendent, so as to facilitate movements of vessels.

A report from Duluth says that the government engineers who met there a few days ago to consider the matter of deepening Duluth and Superior harbors to 20 feet will endorse recommendations made by Maj. Sears, government engineer at that point. These recommendations contemplate the establishment of a large basin inside the natural entrance with a 20-foot channel 400 feet wide leading to Allouez bay and along the established dock line on the Superior shore to St. Louis bay, and thence to Duluth, with another basin at the artificial entrance. They also contemplate the condemnation and destruction of enough of Connor's point to give reasonably straight access to Tower bay slip, thus doing away with the present reverse curve that is such a hindrance to the landing of large vessels at that point.

### In General.

Five days, 7 hours and 48 minutes is now the Cunarder Lucania's time between Queenstown and New York. She is breaking records with each trip. On the trip for which this record is recorded the course was 2,782 miles, and her hourly average was 21.77 knots.

The Cramps launched their two hundred and eighty-second vessel a few days ago. She is for the Reading Railroad Company, is named Lebanon, and is 258 feet 10 inches over all. Her engines are triple expansion, surface condensing, with direct-acting inverted cylinders, working on cranks at angles of 120 degrees. Cylinders are 19, 30 and 50 inches diameter and the stroke of 30 inches. The vessel is intended for the coal trade between Philadelphia and New England ports, and is expected to carry 1,600 tons cargo and 190 tons fuel on a draft of 15½ feet, while towing three barges carrying 1,500 tons each.

A process of putting fuel aboard steamboats in New York harbor, invented by Louis DeMayo, chief stevedore of the American Line, may be worthy of investigation by fueling companies on the lakes. Square boxes, each holding fifty tons of coal, are fitted into barges so that they can be raised upon screws above the steamer that is being coaled, and their contents discharged through shutters into the steamship, largely by gravitation. It is pronounced twice as fast, and a saving of at least ten cents a ton over the method of buckets and hoisting apparatus in use in New York, and which is also followed on the lakes.

### Trade Notes.

The wording of the award granted to the Penberthy Injector Company of Detroit, by judges at the Worlds Columbian Exposition, is highly complimentary. The judges say of the injectors: "They are efficient and reliable, simple in design and construction, thoroughly automatic under varying conditions, showing great lifting power through hot or cold suction pipe, and are easily operated and capable of working under a broad range of possibilities."

A few days ago the Bethlehem Iron Company of South Bethlehem, Pa., used twenty-one railway cars in a single shipment to the Cramp ship yard, Philadelphia. The shipment included one 17-inch barbette, a conning tower for the Massachusetts and five 18-inch side armor plates for the Indiana, weighing thirty tons each.

The Montague Iron Works Company of Montague, Mich., has closed contracts as follows: One steeple compound marine engine with cylinders 16 and 30 inches diameter by 24 inches stroke, for a new steamer being built by Monroe & Nicholls, Charlevoix, Mich.; one fore and aft compound marine engine with cylinders 18 and 36 inches by 30 inches stroke, for the steamer H. W. Williams, South Haven, Mich.; one steeple compound marine engine with cylinders 14 and 28 inches by 20 inches stroke, for the steamer Glenn, South Haven, Mich.; one steeple compound marine engine with cylinders 12 and 21 inches by 16 inches stroke, for the steamer Lorain I., South Haven, Mich.



# MARINE REVIEW.

DEVOTED TO THE LAKE MARINE AND KINDRED INTERESTS.

Published every Thursday at No. 516 Perry-Payne building, Cleveland, O.

SUBSCRIPTION—\$2.00 per year in advance. Single copies 10 cents each. Convenient binders sent, post paid, 75 cents. Advertising rates on application.

The books of the United States treasury department contain the names of 3,341 vessels, of 1,227,400.72 gross tons register in the lake trade. The lakes have more steam vessels of 1,000 to 2,500 tons than the combined ownership of this class of vessels in all other sections of the country. The number of steam vessels of 1,000 to 2,500 tons on the lakes on June 30, 1894, was 318 and their aggregate gross tonnage 525,778.57; in all other parts of the country the number of this class of vessels was, on the same date, 211 and their gross tonnage 314,016.65. The classification of the entire lake fleet on June 30, 1894, was as follows:

Class.	Number.	Gross Tonnage.
Steam vessels.....	1,731	843,239.65
Sailing vessels.....	1,139	302,985.31
Canal boats.....	386	41,961.25
Barges.....	85	39,214.51
Total.....	3,341	1,227,400.72

The gross registered tonnage of vessels built on the lakes during the past five years, according to the reports of the United States commissioner of navigation, is as follows:

	Number.	Net Tonnage.
Year ending June 30, 1889.....	225	107,080.30
" " " 1890.....	218	103,515.00
" " " 1891.....	204	111,856.45
" " " 1892.....	169	45,168.98
" " " 1893.....	175	99,271.24
Total.....	991	471,891.97

## ST. MARY'S FALLS AND SUEZ CANAL TRAFFIC.

	St. Mary's Falls Canal.			Suez Canal.		
	1893.	1892.	1891.	1893.	1892.	1891.
No. vessel passages	12,008	12,580	10,191	3,341	3,559	4,207
Ton'ge, net regist'd	9,849,754	10,647,203	8,400,685	7,659,068	7,712,028	8,698,777
Days of Navigation	219	223	225	365	365	365

Entered at Cleveland Post Office as Second-class Mail Matter.

"SILVER, Gold and Shipping" is the title of an article printed recently in the Social Economist, and which the author, William W. Bates of Chicago, ex-commissioner of navigation, has had printed in pamphlet form. Mr. Bates holds the shipping question up as a third partner for commerce and money. Half a million dollars a day and upward, he claims, payable in gold if wanted, is the debt created every day in the week, all the year round, by the employment of foreign shipping instead of our own. "Our own, if we had it," he says "could be paid in silver or bank notes. Plain as these facts are, we never see transportation in trade abroad taken as a factor in balancing trade accounts. Stocks and bonds are often considered, but it is generally overlooked that an amount of money equal to two billions, or an average of 200 millions yearly, for ten years past, has been earned by foreign shipping in doing our ocean transportation, and is now represented by stocks and bonds abroad, that may at any time be sent back for gold. The continuing and ever-present menace of gold exportation and frequent sale of bonds to provide money of redemption will break up our prosperity and sooner or later destroy our government. The demonetization of silver and the want of a merchant marine in the foreign trade is in the line of perfect consistence with commercial thralldom to Great Britain. If this rich creditor nation should become bimetallic, as in justice she should, it would not relieve us altogether from the beggaring consequence of foreign monopoly of our trade and transportation. The way to have our monetary system as we want it, and to keep it so, is to have our own marine and to maintain it."

In the next congress vessel owners of the lakes are to seek appropriations for only one class of improvements, new lights, fog signals and other aids to navigation. A start has been made by the appointment of a committee of executive officers of the Lake Carriers' Association to visit Washington and consult the light-house board with reference to the aids for which appropriations are to be asked. No part of the coast line of the United States is more important or more extensive than that of the lakes, and the list of new lights and fog signals sought by the vessel owners is entirely within the immediate demands of commerce. In this legislation, which is of a general kind, the vessel owners should have the assistance of all congressmen from lake states.

A COMMUNICATION in this issue from Mr. Richard P. Joy of Detroit regarding the effect of the Chicago drainage canal on the level of the

lakes, is, it would seem, worthy of the attention of vessel owners. Mr. Joy has a full knowledge of lake business and the importance of a few inches increase or decrease in the draft of water in connecting channels or harbors. He has given considerable attention to this question, and the letter which he quotes from a Chicago engineer, Mr. Gordon H. Nott, presents some new points on the subject.

THE CITY of Philadelphia may be slow in some things but not in matters relating to harbor improvements that promote commercial welfare. An example that might well be followed by leading lake cities is furnished in the efforts of the citizens of Philadelphia to have their port offer the best terminal facilities on the coast. The general government is not depended upon for all harbor facilities. A proposition now before the municipality is to have Philadelphia spend \$1,500,000 on extending the city piers, improving the water front and deepening the channel in Delaware river.

TONNAGE losses from collision and recent storms will not materially affect the carrying capacity of the lake fleet. Take, for instance, total losses of the past two weeks, which include the steamers James Pickands and Ohio and the schooners Ironton and Wm. Home. One new steel freight steamer like the I. W. Nicholas, recently built by the Cleveland Ship Building Company, would carry in a season as much as four boats that were lost.

## Advance in Wages.

In accordance with the usual custom of advancing wages in the fall, executive officers of the Lake Carriers' Association met in Cleveland Tuesday and adopted a new schedule. No change is made in the wages of engineers, mates, cooks or cooks' helpers on steamers, but in all other departments on both steamers and sail vessels advances ranging from \$3 to \$10 a month are announced to take effect Oct. 15. Changes are recorded in the following table:

On Steamers.	Old Rates, per month.	New Rates, per month.
	March 13, 1894.	Oct. 15, 1894.
Firemen.....	\$25.00 to \$30.00	\$30.00 to \$37.50
Wheelmen.....	25.00 " 30.00	30.00 " 37.00
Lookouts.....	20.00 " 30.00	30.00 " 37.50
Deck Hands.....	12.00 " 15.00	15.00 " 20.00
Oilers.....	25.00 " 30.00	30.00 " 37.50
On Consorts and Sail.		
First mates.....	\$30.00 to \$45.00	\$40.00 to \$50.00
Second mates.....	25.00 " 35.00	30.00 " 40.00
Seamen.....	25.00 " 30.00	30.00 " 37.50
Cooks.....	25.00 " 30.00	30.00 " 37.50
Boys.....	12.00 " 15.00	15.00 " 20.00

Secretary Keep attended the meeting, and he was authorized to make arrangements for a visit to Washington as soon as possible. Mr. Keep will be accompanied by President Corrigan and Capt. Geo. McKay, chairman of the committee on aids to navigation. The object of the trip is to consult the light-house board relative to the list of lights, fog signals, etc., recommended by the association for the consideration of congress and the board. The list was published in the REVIEW of Sept. 27.

## Mr. Kirby Writes of the Steamship Great Britain.

EDITOR MARINE REVIEW:—I was inclined to enlighten Mr. Chestnut\* about the original engines of the Great Britain, but Mr. Stevens\* has saved me the trouble and put him right. I might add that the Engineer of London, issue of Oct. 13, 1893, illustrates the original engines; and the second set by Penn, together with the lines of the ship, are illustrated in the "Treatise on the Screw Propeller" by John Bourne, published in 1867. There were many interesting structural features about this old ship besides her machinery. She had a heavy angle iron frame and no floor plates. Sufficient stiffness was given to the bottom by a peculiar form of cross-section and the beams and stanchions were braced to the frames after the fashion of a barn frame, instead of solid gussets as now fitted. Her counterbalanced rudder was of unusual design; the stock after passing out under the tuck turned aft and followed the back of the blade, serving as a sort of crank for operating the rudder. The rudder post, which also served in place of pintles, passed through the rudder between the plates at about a quarter length from the forward edge, and was secured at the heel to the shoe and at the head to a projection of the stern frame extending over the propeller, thus doing away with the obstructing rudder post and at the same time securing a tie to the end of the shoe. Her strength was largely due to her good form, and excellent material and workmanship, as I can personally testify, having inspected the ship in dry-dock at Liverpool in 1872, when she was at about the end of her career.

FRANK E. KIRBY.

DETROIT, Mich., Oct. 9, 1894.

\*Communications referred to, appeared in Sept. 20 and Oct. 4 issues of the MARINE REVIEW.

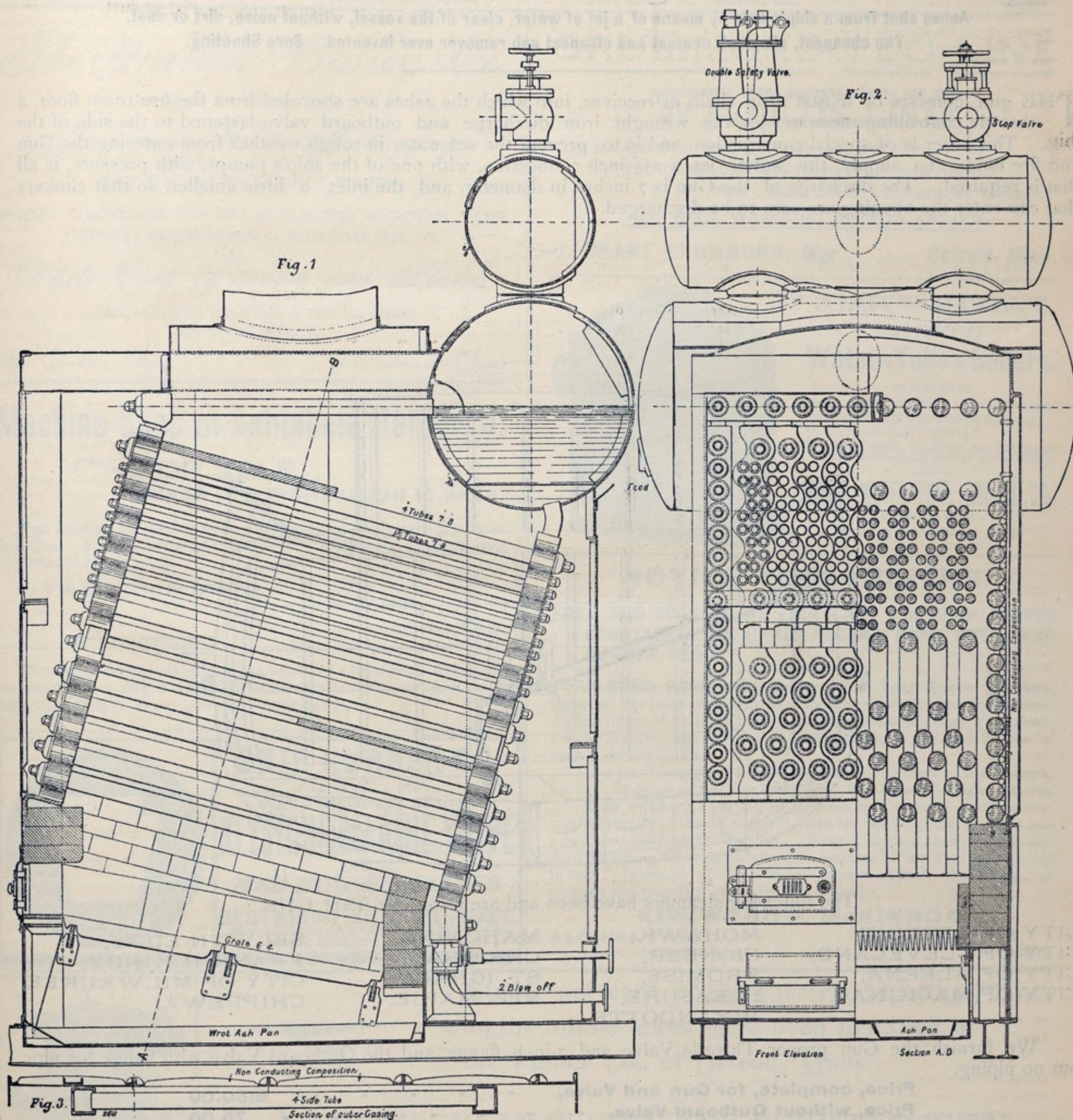


### Latest Type of Babcock and Wilcox Boiler.

In the engravings appearing on this page a Babcock and Wilcox tubulous boiler of the latest type for marine purposes is illustrated. Two boilers of this type are being fitted by the Babcock and Wilcox Company, limited, of Glasgow in the French screw steamer *Algerie* at Bordeaux. The general principle of the boiler is the same as that of the first type made by the company, but each boiler has two groups of tubes over the fire, the lower group being composed of five rows of tubes 4 inches in diameter,

joined to the drum directly by short tubes. These headers are constructed of mild steel, each being formed from a single plate.

The steam and water drum is surmounted by a steam drum, on which the usual mountings are fixed. The sides of the boiler are formed by means of 4-inch tubes expanded into wrought-steel boxes at the front and rear on each side, and the sides of the furnace are of firebrick and special fire tiles. Outside of the tubes and firebrick there is a light sheet iron casing filled with non-conducting composition. There are suitable baffle



LATEST TYPE OF BABCOCK AND WILCOX TUBULOUS MARINE BOILER.

as in the land type of boiler by the same firm, and the upper group of twelve rows of tubes, generally as in the former marine type. The top and bottom rows of the latter series are 4 inches in diameter, and the other rows 2 inches, as shown on Fig 2. The top and bottom groups of tubes are each connected to headers as in the land boiler. The lower headers are joined to the top headers by short tubes, and the top headers in turn to a long horizontal box by similar short tubes. This horizontal box is connected by 4-inch horizontal tubes to the steam and water drum. The rear headers for both groups of tubes are constructed in a similar manner to the front headers, and the headers in the top group are each

plates provided for deflecting the path of the gases over the whole of the tube surface.

In the French ship, which is owned by Messrs. Verdeau et Cie., each of the boilers have 1418 square feet of heating surface and 25 square feet of grate surface. The boilers were ordered after the company had had in use for one year on the same vessel a donkey boiler constructed by the Babcock and Wilcox Company. By the use of the boiler a large increase in the heating surface has been obtained, enabling a larger supply of steam to be given to the engines, and at the same time a large reduction in weight has been effected. The engravings are from Engineering of London.



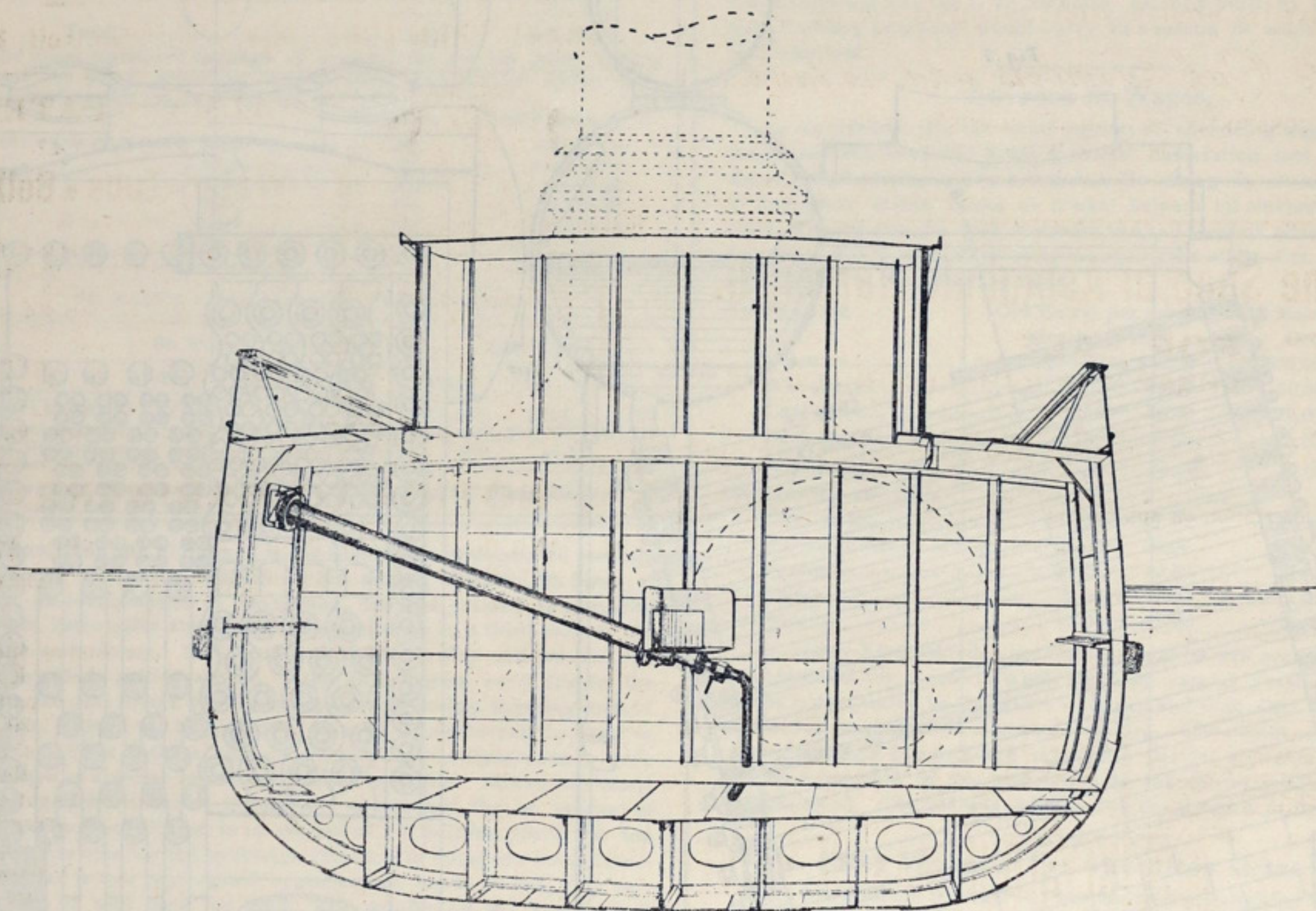
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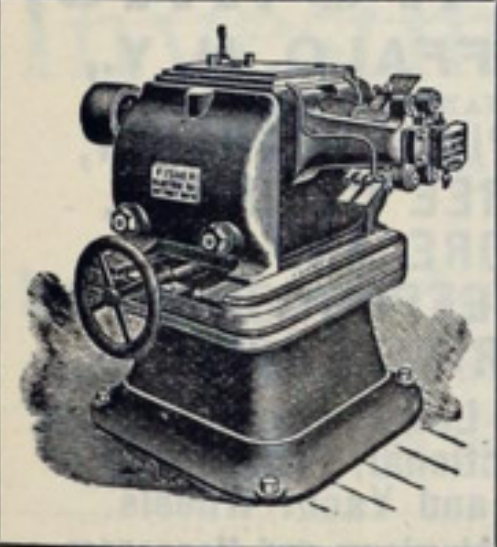
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## GRUMMOND TUG LINE WRECKING

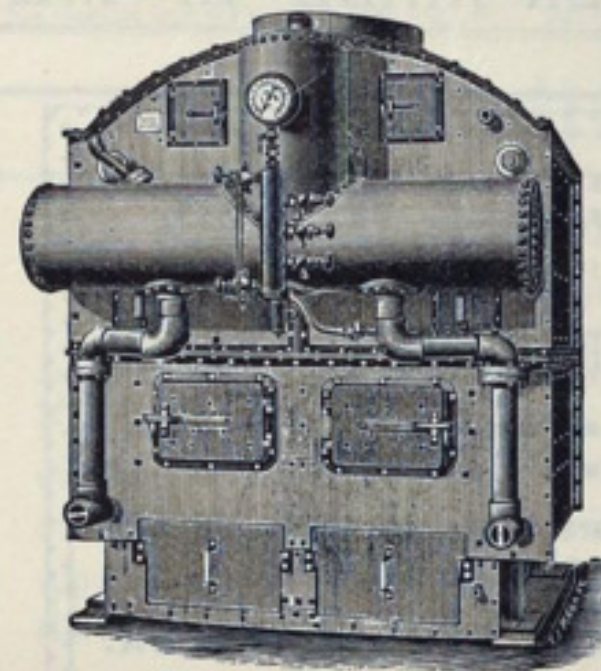
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They will keep a supply of fuel and ship stores of every descrip-  
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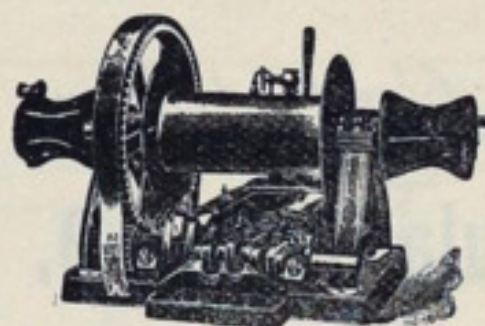
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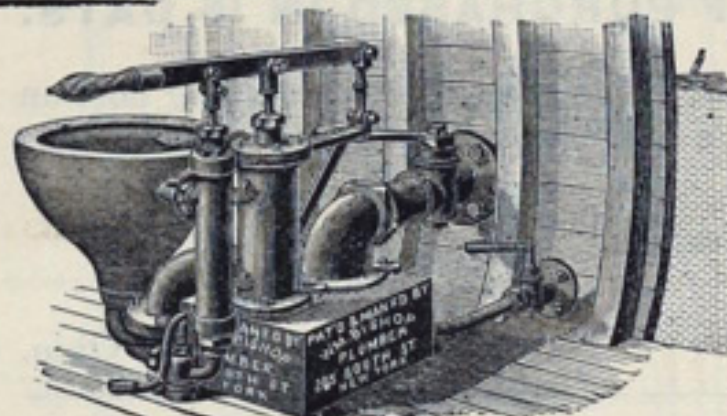
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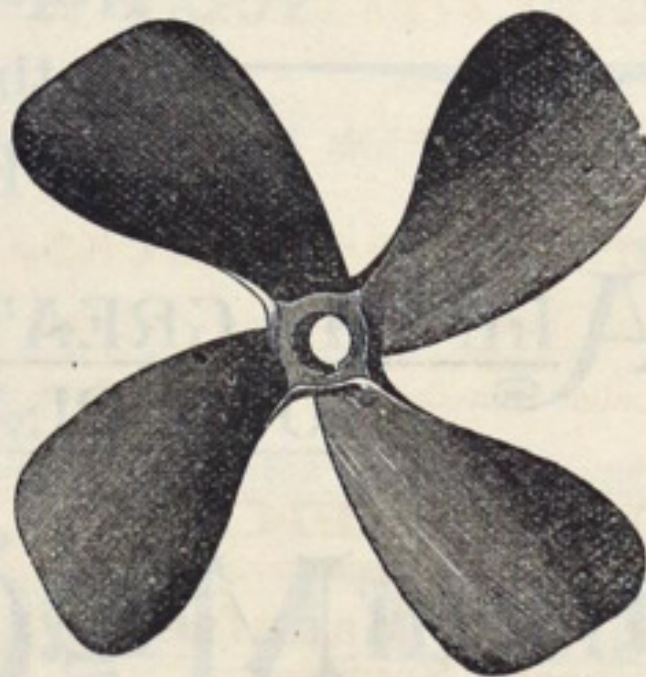
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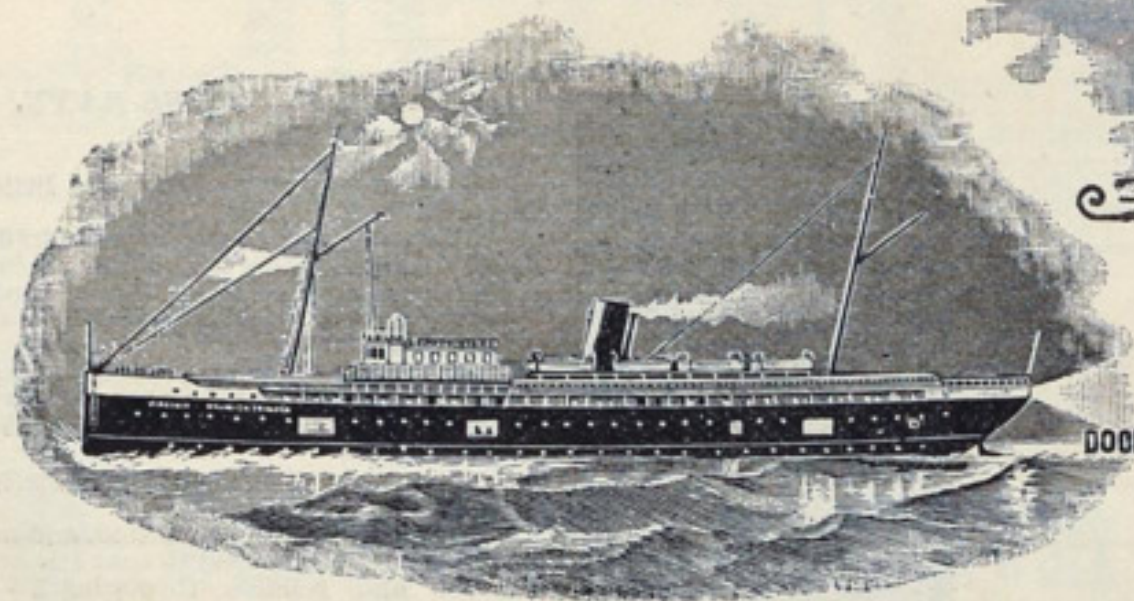
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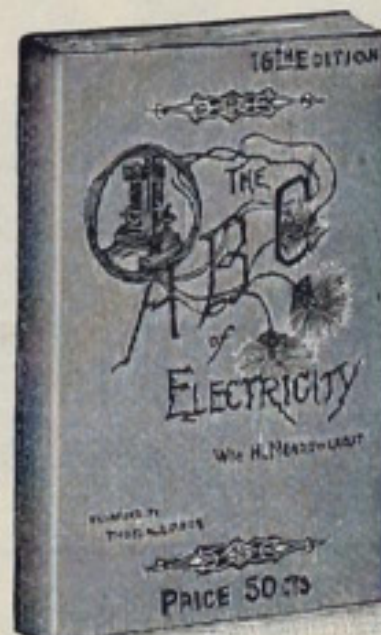
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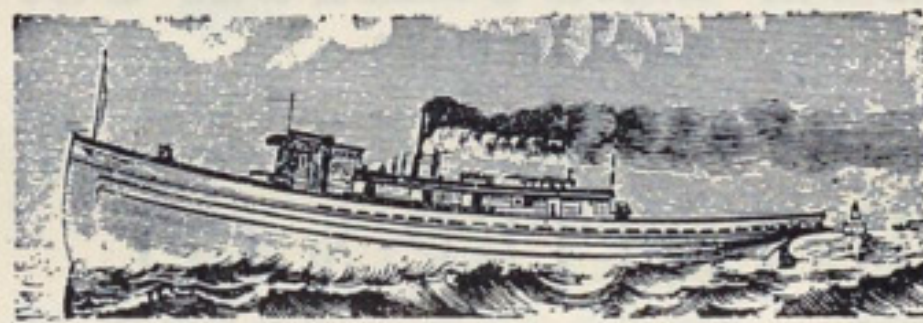
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References: American Steel Barge Co.;  
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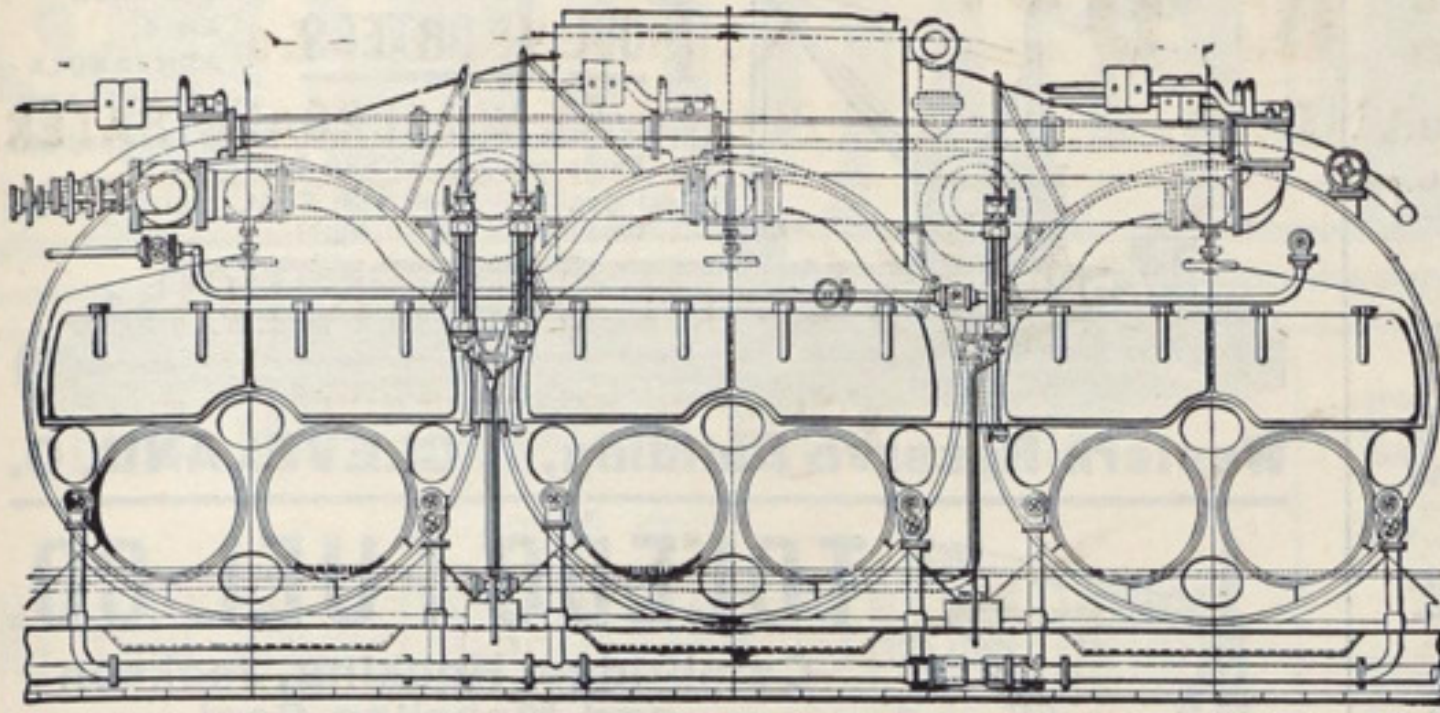
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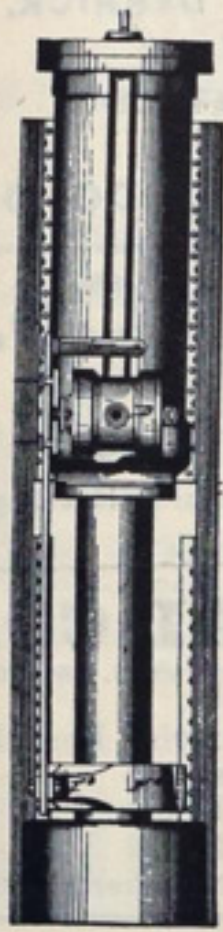
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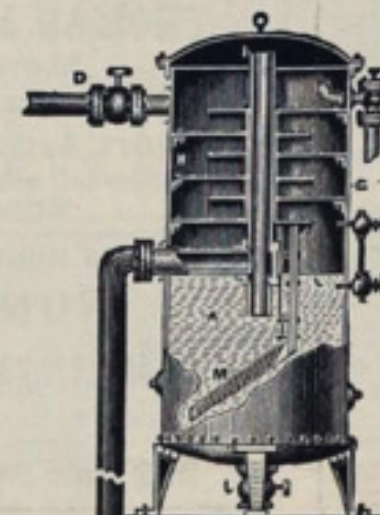
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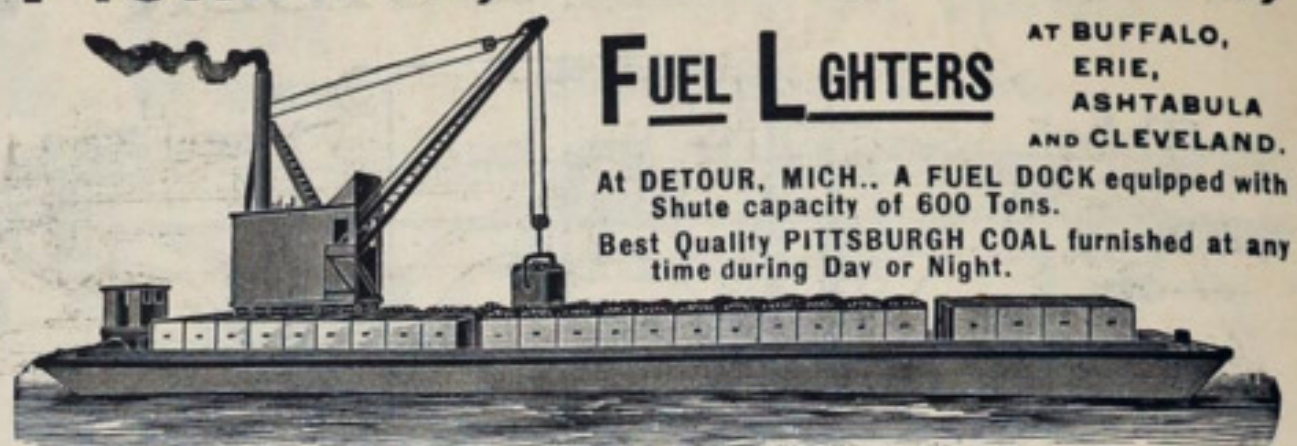
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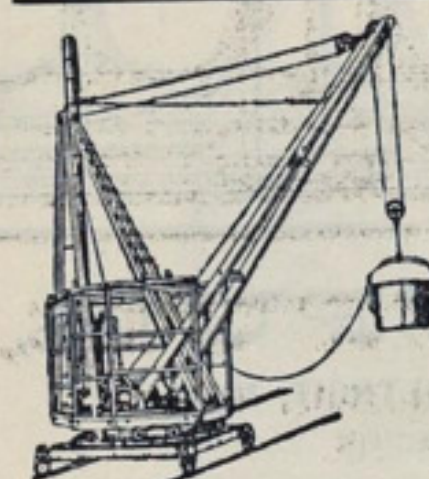


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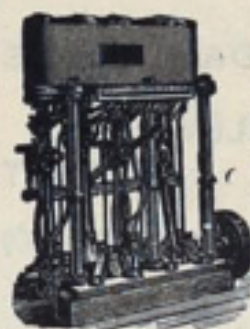
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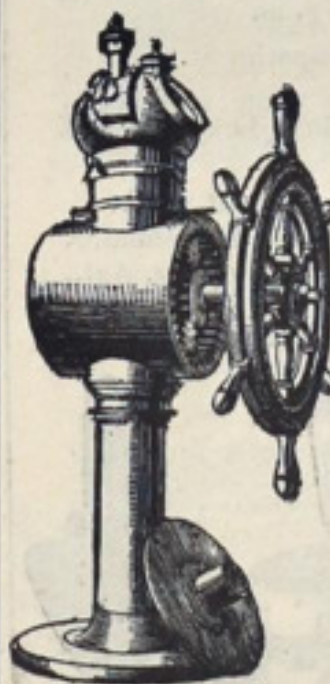
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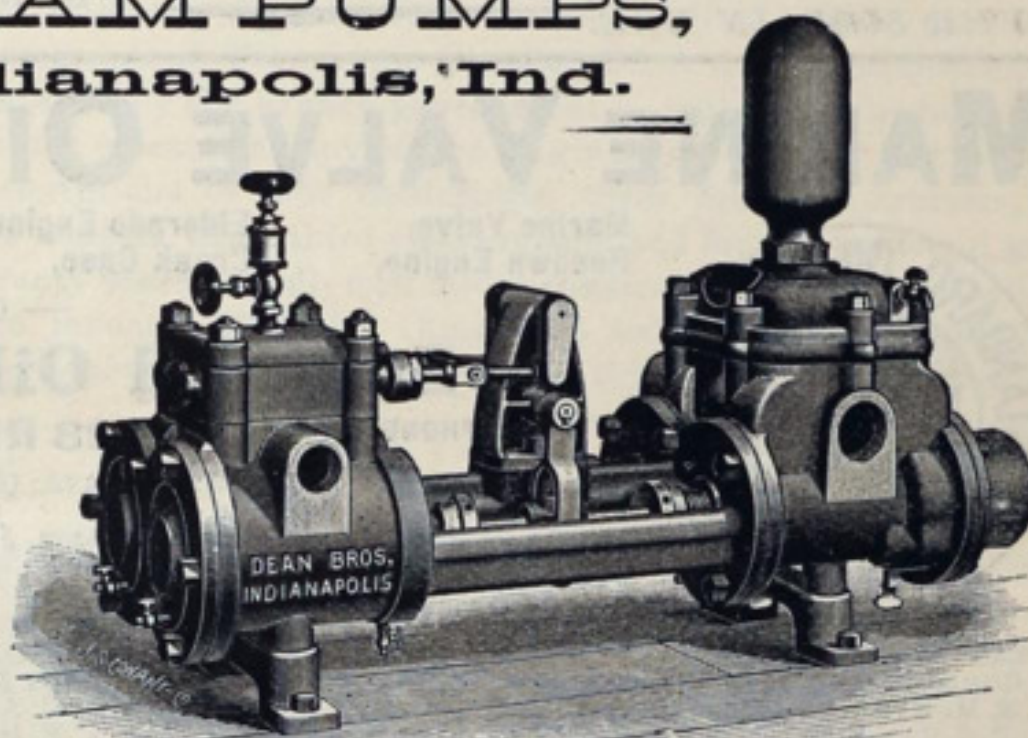
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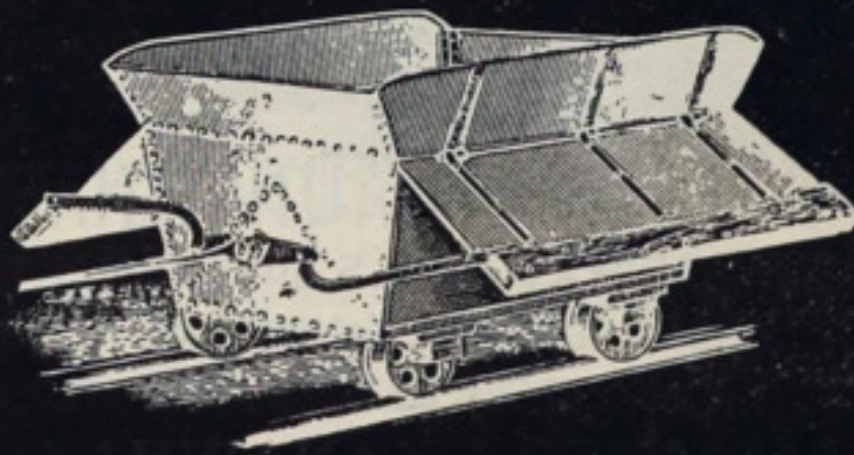
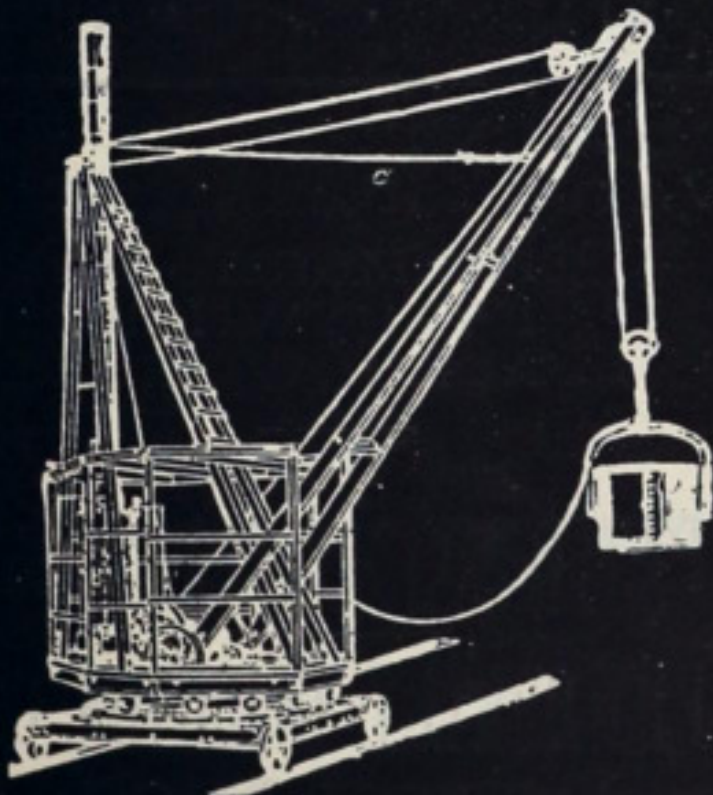
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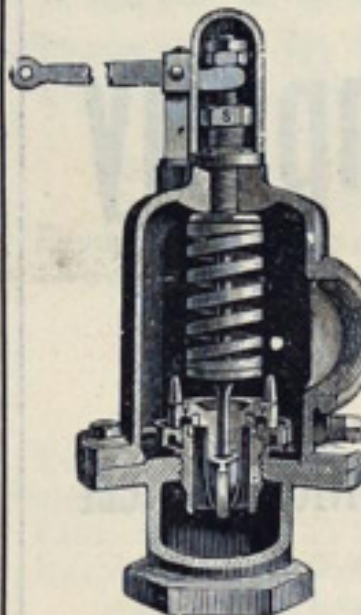
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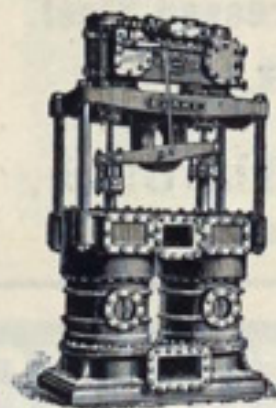
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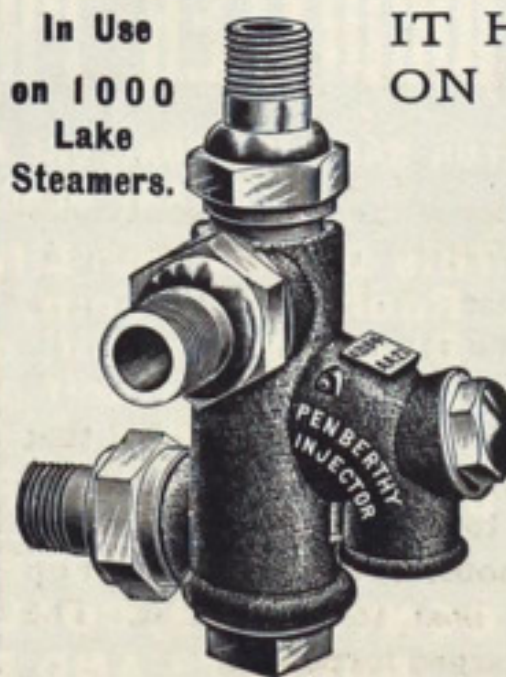
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